

ACTION SHEET 6

The United States Department of Energy (DOE)

and

The Japan Atomic Energy Research Institute

for

**Cooperation and Participation in the DOE International Remote
Monitoring Project**

1. Introduction

Pursuant to the DOE/JAERI Agreement on R&D in Material Control, Accountancy, Verification, Physical Protection, and Advanced Containment and Surveillance for International Safeguards applications, the parties agree to cooperate as follows:

2. Scope of Work

The United States Department of Energy (DOE) and the Japan Atomic Energy Research Institute (JAERI) wish to conduct a joint field evaluation between Sandia National Laboratories (SNL) and JAERI, using the technologies of the International Remote Monitoring Project at the JAERI Safeguards Technology Laboratory (STL), Tokai-mura, Japan. The activities in this Action Sheet will provide a basis for determining the reliability and cost of remote monitoring, and will also address the customization of the system to the conditions and desired monitoring functions to be conducted at the JAERI STL. Activities are expected to include detailed design, installation, and field test of the system. Selected data will be stored on-site, and remotely transmitted to SNL and other appropriate location(s) as jointly agreed.

3. Program Management

The Department of Energy has developed and is field testing a remote monitoring system which may eventually be used in international safeguards applications. The project uses the Sandia National Laboratories (SNL) integrated monitoring system (IMS), and is being conducted with significant involvement by several of the DOE national laboratories and DOE's bilateral international partners. The work to be done is described in Appendix I. The field evaluation of the system will include its interface to installation specific equipment; data acquisition and review

technologies; and data storage, review, and transmission techniques, and costs associated with data transmission.

Specific sensors to be initially supplied by SNL for this remote monitoring application include a microwave motion sensor, a wired Authenticated Item Monitoring System (AIMS) movement sensor, and two nodes that will accept two JAERI supplied sensors (either internal or external to the nodes). Also included is a lamp node that will illuminate the monitored area while a video image is being captured by the data logging computer.

4. Fiscal Management

The activities carried out by DOE and JAERI will be funded and managed by each respective organization. No exchange of funds is anticipated at this time.

Approvals:

For the Japan Atomic Energy
Research Institute

For the United States
Department of Energy

Signature: Koji Ikawa

Printed
Name: Koji Ikawa

Title: Head of Safeguards Tech. Lab.

Date: 2/1/95

Signature: Kenneth E. Sanders

Printed
Name: Kenneth E. Sanders

Title: Division Director

Date: 1/25/95

APPENDIX I

DOE/JAERI Action Sheet 6

Cooperation and Participation in the DOE International Remote Monitoring Project

1. Outline

DOE, SNL, and JAERI will cooperate in installing and conducting field trials of a remote monitoring system, with the initial installation occurring at the JAERI Safeguards Technology Laboratory (STL) in Tokai-mura, Japan. The initial system will include the basic network, its nodes and sensors supplied by SNL, system sensors supplied by JAERI, together with the necessary equipment for transmission of the network information to the receiving station at Sandia National Laboratories (SNL). As the field trial activities progress, JAERI will expand the system with inclusion of the basic Containment and Surveillance Data Authenticated Communication (CASDAC) equipment, and other elements considered appropriate. The goals of the remote monitoring field trials are to

- examine and define the technical parameters related to communications protocol, digital standards, sensor and sub-system interfaces, data display and management, overall reliability, and others as deemed necessary,
- demonstrate the technical feasibility and political acceptability of remote monitoring in today's safeguards environment, and
- gain international acceptance of the remote monitoring concept.

2. Site

This work will be conducted at Sandia National Laboratories (SNL), and the JAERI Safeguards Technology Laboratory (STL) in Tokai-mura, Japan.

3. Programmatic Responsibilities

An integrated monitoring system will be customized, documented, and delivered to JAERI by DOE (Sandia National Laboratories) which will enable JAERI and DOE to demonstrate various aspects of remote monitoring. During the field test period, DOE will fund the initial integrated monitoring system equipment for evaluation and the cost of expert technical support.

The remote monitoring activities to be conducted under this project are intended as a technology demonstration activity. JAERI will provide an interface to the integrated monitoring system network for the existing JAERI CASDAC system, and the sensor data collected and stored by it.

SNL will provide JAERI with detailed information on the integrated monitoring system, which may be used to evaluate the applicability and optimum way of installing and operating this system. SNL experts will provide manuals and program documentation to JAERI concerning the system and system components for this project.

SNL and JAERI STL personnel will collaborate in establishing the ground station in Tokai-mura, and ensure that the system is operating properly and does not interfere with STL facility operations.

SNL will continue to engineer custom miniaturized radiation detectors for use with the integrated monitoring system and remote monitoring capability to be installed at the JAERI STL.

JAERI will collaborate on the custom design for the integrated monitoring system, act as coordinator with the STL for system installation and field test, and host the installation and field test visits. JAERI will provide SNL appropriate data on the desired interface with the CASDAC system, and pertinent information on JAERI sensors which they desire to interface with the DOE IMS system.

Provisional Schedule for Action Sheet 6

Activity	Responsible Party	Completion date
System Installation	DOE (SNL)	12/5/94
Initiate Field Test	JAERI (STL), DOE (SNL)	12/19/94
Progress Reports	JAERI (STL), DOE (SNL)	Quarterly
System Upgrade Decision Point	JAERI (STL), DOE (SNL)	12/31/95
Field Test Completion	JAERI (STL), DOE (SNL)	12/31/96
Field Test Report	DOE (SNL)	2/28/97